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not satisfied that this fact was of a generic value, and consequently described the species as a *Cambarus* with the same propriety as he might have placed it in the genus *Astacus*.

August 23d.

Vice-President BRIDGES in the Chair.

A letter was read from the Librarian of the Royal Academy of Sciences of Amsterdam, dated 27th July, 1853, asking for certain volumes and numbers of the Proceedings, to complete their series.

August 30th.

Vice-President BRIDGES in the Chair.

The Committee on Dr. Hoy's continuation of his paper on the Ornithology of Wisconsin, reported in favor of publication in the Proceedings.

Notes on the Ornithology of Wisconsin.

By P. R. Hox, M. D., of Racine, Wisconsin.

[Continued from page 313.]

CERTHIADÆ, (5 species.)

* *CERTHIA AMERICANA*, Bonap.

Common throughout the year.

* *SITTA CAROLINENSIS*, Linn.

Common, remains during the winter.

* *SITTA CANADENSIS*, Linn.

This species does not remain with us during winter. A few nest near Racine, a greater number in the pine regions in the northern part of the State.

* *PARUS ATRICAPILLUS*, Linn.

Abundant, remain during winter.

PARUS HUDSONICUS, Lath.

A small party of this northern species visited Racine during the unusually cold January of 1852.

AMPELIDÆ, (2 species.)

BOMBECILLA GARRULA, Vieill.

Arrives in large parties from the first to the last of November, and leaves by the 15th April. The first arrivals are all young birds, destitute of the yellow markings on the wing, and with less of the wax-like appendages. These young birds generally proceed further south to winter, while the old birds, in perfect plumage, arrive later, and seldom, if ever, go further. I never have seen an individual entirely destitute of the *wax* ornaments. The only perceptible difference between the sexes is in size, the females being slightly the larger. In fifty specimens accurately measured, the average was :

Females,	.	.	.	.	.	85-12—14½.
Males,	.	.	.	.	.	82-12—13½.

They are unsuspicious, permitting a near approach. Their fare consists of a variety of berries, but those of the mountain ash, (*Pyrus Americana*), appear to be preferred to all others. They are frequently seen to eat snow as a substitute for drink.

- * *BOMBYCILLA AMERICANA*, Swain.
Common, does not remain during winter.

ALAUDINÆ, (2 species.)

- * *OTOCORIS ALPESTRIS*, Linn.
Abundant on the prairies. A few remain during the entire winter.
- * *OTOCORIS RUFA*, Aud.
Not an abundant species with us; becomes more numerous as you go west.

FRINGILLIDÆ, (33 species.)

- PLECTROPHANES NIVALIS*, Linn.
Abundant from November to April.
- PLECTROPHANES LAPPONICA*, Linn.
Met with in great abundance on the prairies, from the middle of October to the middle of May. Before they leave us in the spring they are in full song and perfect plumage. They sing in concert like blackbirds, either while on the wing or settled on fences.
- PLECTROPHANES SMITHII*, Aud.
Occasionally met with in considerable numbers on the prairies.
- * *ZONOTRICHIA ILIACA*, Bonap.
Common during October and April.
- * *ZONOTRICHIA MELODIA*, Wilson.
Common.
- ZONOTRICHIA PENNSYLVANICA*, Lath.
Abundant during spring and fall.
- * *ZONOTRICHIA LEUCOPHRYS*, Gmel.
Met with in great abundance in company with the preceding. A few nest in the vicinity.
- ZONOTRICHIA GRAMINEA*, Gmel.
Occasionally seen, but is rare.
- * *ZONOTRICHIA PASSERINA*, Wilson.
Not uncommon in the reedy *slews* on the prairies.
- * *ZONOTRICHIA FUSILLA*, Wilson.
Not an abundant species with us.
- * *ZONOTRICHIA SOCIALIS*, Wilson.
Common, arrive 1st of May.
- ZONOTRICHIA PALLIDA*, Swains.
Not unfrequently met with about the middle of May.
- ZONOTRICHIA CANADENSIS*, Lath.
Very numerous autumn and spring, but few remain through the winter.
- * *ZONOTRICHIA SAVANA*, Bonap.
Common on the high prairies.
- * *ZONOTRICHIA LINCOLNII*, Aud.
Not uncommon spring and fall. A few remain during summer, and undoubtedly nest with us.
- * *NIPHEA HYEMALIS*, Linn.
Common spring and autumn. Do not remain through the winter. Nest on Lake Superior.
- * *AMMODROMUS PALUSTRIS*, Wilson.
Common.

LINARIA MINOR, Aud.

Abundant every winter.

LINARIA BOREALIS, Temm.

The only time I ever met with this bird was in December, 1850.

* *CHRYSOMITRIS TRISTIS, Linn.*

Common.

* *CHRYSOMITRIS PINUS, Wilson.*

Abundant.

* *CHONDESTES GRAMACA, Say.*

Common. Frequently met with in the roads, expanding and closing their fan-like tails at every hop. One of the most agreeable singing birds. Their song is a singular combination of the Thrush, Finch, and Tohe-Bunting.

* *EUSPIZA AMERICANA, Gmel.*

Not uncommon.

* *SPIZA CYANEA, Wilson.*

Common.

* *PIPILO ERYTHROPHALMA, Wilson.*

Abundant.

* *CARPODACUS PURPUREUS, Gmel.*

Common during spring and fall. A few nest with us, many more on the shores of Lake Superior.

CORYTHUS ENUCLEATOR, Wilson.

Numerous during severe winters.

* *LOXIA CURVIROSTRA, Linn.*

Abundant in the pine forests. Large flocks occasionally visit our vicinity during fall and winter, feeding on the seed of the sunflower (*Helianthus annuus*).

LOXIA LEUCOPTERA, Gmel.

Occasionally visit us—not common.

* *PITYLUS CARDINALIS, Linn.*

A few stragglers nest with us—rare.

* *COCOBORUS LUDOVICIANUS, Wilson.*

Common. Arrive 1st of May.

COCOBORUS VESPERTINUS, Cooper.

Not an uncommon bird. During winter and spring they frequent the maple woods, feeding on the seeds of the sugar maple (*Acer saccharinum*), in quest of which they spend much time on the ground. I have noticed this bird as late as the 15th of May. In all probability they nest within the State. Unsuspicious, easily approached. Their song lacks the melody of our other species of Grosbeaks.

* *PYRANGA RUBRA, Wilson.*

Common.

STURNIDÆ, (9 species.)

* *STURNELLA LUDOVICIANA, Linn.*

Common, but does not remain during winter.

* *YPHANTES BALTIMORE, Linn.*

Abundant.

* *YPHANTES SPURIUS, Gmel.*

Common.

- * *DOLICHONYX ORYZIVORA*, *Linn.*
Abundant.

MOLOTHRUS PECORIS, *Wilson.*

Common. I found the egg of this bird, in one instance, in the nest of the Red-winged Blackbird.

- * *AGELAIUS XANTHOCEPHALUS*, *Bonap.*

A few nest within fifteen miles of Racine, in an extensive marsh. Seldom visit the lake shore.

- * *AGELAIUS PHENICEUS*, *Linn.*
Abundant every where.

- * *SCOLECOPHAGUS FERRUGINEUS*, *Lath.*

Common fall and spring. Arrive 15th of March. A few remain during summer.

- * *QUISCALUS VERSICOLOR*, *Vieill.*
Common.

CORVIDÆ, (5 species.)

- * *CYANOCORAX CRISTATUS*, *Linn.*
Common through the year.

CYANOCORAX CANADENSIS, *Linn.*

Occasionally during severe winters visit the vicinity of Racine.

PICA MELANOLEUCA, *Aud.*

Occasionally a straggler visits us. Two were shot in Caledonia, ten miles from Racine, December, 1848. A gentleman of this city obtained one at Balier Harbor, on Lake Michigan, November 15, 1849.

- * *CORVUS AMERICANUS*, *Aud.*

A singular fact in relation to the Crow is, that it never takes up its quarters within fifteen or twenty miles of Lake Michigan, within this State. At Racine it may be considered one of the *rarest birds*.

- * *CORVUS CORAX*, *Linn.*

More numerous than the preceding. Remain through the winter.

TROCHILIDÆ (1 species.)

- * *TROCHILUS COLUBRIS*, *Linn.*
Common.

PICIDÆ, (1 species.)

- * *PICUS PILEATUS*, *Linn.*

Common in heavy timber districts.

DENDROCOPUS CANADENSIS, *Gmel.*

Occasionally met with during winter—rare.

- * *DENDROCOPUS VILLOUS*, *Linn.*

Abundant through the year.

- * *DENDROCOPUS PUBESCENS*, *Linn.*

Common—remain during winter.

- * *DENDROCOPUS VARIUS*, *Linn.*

Common. Leave us 1st of November, arrive 15th April. This Woodpecker visits the orchards during September and October, to feed upon the inner bark of the peach and cherry, girdling the stems so effectually as not unfrequently to kill the trees. I have watched them while thus engaged in my own garden, and have carefully examined, under a microscope, the contents of the stomachs of numerous specimens.

- * *MELANERPES ERYTHROCEPHALUS*, *Linn.*
Common, migratory.

APTERNUS ARCTICUS, *Swains.*

I have specimens of this Woodpecker shot near Racine in the month of November.

- * *COLAPTES AURATUS*, *Linn.*
Common.

- * *CENTURUS CAROLINUS*, *Linn.*
Not an abundant species with us. They remain during winter.

CUCULIDÆ, (2 species.)

- * *COCCYZUS AMERICANUS*, *Linn.*
Not so numerous as the following.
- * *COCCYZUS ERYTHROPHthalmus*, *Wilson.*
Abundant.

PSITTACIDÆ, (1 species.)

CONURUS CAROLINENSIS, *Linn.*

Formerly Paroquets were common on the Mississippi, within this State—later they are seldom met with.

COLUMBIDÆ, (2 species.)

- * *ECTOPISTES MIGRATORIA*, *Linn.*
Abundant.
- * *ECTOPISTES CAROLINENSIS*, *Linn.*
Common. Remain during winter.

PAVONIDÆ, (1 species.)

- * *MELEAGRIS GALLOPAVO*, *Linn.*
Formerly Turkeys were common in this section, but now none are to be found. The last noticed near Racine was in November, 1846. Abundant in the southwestern counties.

TETRAONIDÆ, (6 species.)

- * *ORTYX VIRGINIANA*, *Linn.*
Within a few years this Partridge has become remarkably numerous.
- * *BONASA UMBELLUS*, *Linn.*
Common in all the timber districts.
- * *TETRAO CANADENSIS*, *Linn.*
Common on the head waters of Wolf River and vicinity of Lake Superior.
- * *TETRAO CUPIDO*, *Linn.*
Greatly abundant. Two sportsmen, with one dog, generally bag from fifty to eighty in a day. We challenge the world for finer sporting grounds than the prairies of Wisconsin furnish during August, September, and October.
- * *TETRAO PHASIANELLIS*, *Linn.*
Formerly quite common near Racine—now seldom met with. Abundant in all the northwestern counties.
- * *LAGOPUS SALICETI*, *Swains.*
In December, 1846, two specimens were caught in a trap ten miles from Racine. West, in the tangle or evergreen swamps of the northwestern parts of the State. Not numerous.

[To be continued.]

The Committee on the following papers by Mr. Girard, reported in favor of publication in the Proceedings.

Observations upon the American species of the genus Esox.

BY CHARLES GIRARD.

The genus *Esox* is represented in North America by quite a large number of species, commonly called "pikes" or "pickerels," without any discrimination. The same species of *Esox* may be called here "pike," and elsewhere "pickerel."

When we first undertook the study of these fish, we were at a loss to know to which species might be strictly applied either of these vernacular names. We asked fishermen, some of them very intelligent, what the difference in their mind was, when calling a certain *Esox* a pike, and another a pickerel? They knew of no difference, but that when a pike was spoken of they understood the very large individuals, whilst the small ones were the pickerels, the young of the preceding.

In examining comparatively *Esox estor* and *Esox reticulatus*, of Lesueur, amongst other differences, it will be perceived that in one (*E. estor*), the cheeks and opercular apparatus exhibit a perfectly smooth and naked skin, whilst in the other (*E. reticulatus*) these same parts are scaly all over.

In tracing the character throughout the range of the species we find naked cheeks and opercular apparatus in the maskallonge (*E. nobilior*, Thomps.) in the pike of Lake Superior, (*E. boreus*, Ag.) and in several others still confounded with *Esox estor* of Lesueur. On the other hand, *Esox americanus*, Lacep. (*E. niger* Lesu.) *E. fasciatus*, Dekay. *E. clathratus*, Bd., MS., resemble *Esox reticulatus* in having the cheeks and opercular apparatus covered with scales.

Consequently there are two groups of species in the genus *Esox*, based upon an organic difference, and for which we have two distinct names. The maskallonge and allied species we ought henceforth to call *Pikes*, retaining the name of *Pickerels* for *Esox reticulatus* and allied species.

The pikes, when full grown, are the largest of the genus; amongst pickerels, we find the smallest species. *Esox reticulatus* is the largest pickerel known, and it is as large as any of the specimens of *Esox boreus* which we have seen. We would nevertheless be inclined to think that the latter reaches a much larger size.

The organic difference which we have pointed out between the pikes and pickerels, corresponds to a curious fact in their geographical distribution in North America; the *Pikes* being confined to the great lakes and western waters generally, whilst the *Pickerels* occur in such ponds and rivers whose waters empty into the Atlantic.

A pike has been introduced into the Connecticut river, and the fact that it has multiplied there, is no objection to this general law of their distribution.

A *Pickerel* is said to occur in the Ohio river. We have not seen any specimen of this fish, the history of which ought to be carefully investigated. If a pickerel was originally an inhabitant of that body of water, then we shall have one exception to the general rule.

Lesueur has indicated under the names of *Esox vermiculatus*, *E. lineatus* and *E. depraudus*, three species of the genus *Esox* from the Wabash river. As no specimens are preserved any where, it will be difficult to identify them, even upon visiting the place where they occur. But one feature can be easily determined, that is whether their cheeks and opercular apparatus are or are not covered with scales. Any traveller will be prepared to make this observation.

Lesueur's *Esox lugubrosus*, from the eastern states, and *Esox phaleratus*, of Say, from Eastern Florida, are likewise undetermined in this respect.

Note upon a nest constructed by Catfish.

BY CHARLES GIRARD.

A few days since, in visiting a small pond, situated above Schuylkill Falls village, an innumerable quantity of small fish were seen along shore, near the surface of the water. On approaching them they all suddenly disappeared, and the water being muddy, we could not tell where they went. A scoop net brought to light a subspherical mass, composed exclusively of green confervæ, and which after examination proved to be a regular nest, constructed, as we suppose, by the parent fish, whose progeny it contained; for in it, the small fishes seen a moment before near the surface had gone to seek shelter. In all probability, the eggs were deposited in it, and when hatched, the young, instead of dispersing themselves, remain for some time congregated, under the care of the parent who provides food for them.

The number of young fish gathered around the nest, was at least from three to four hundred, and of different sizes. The largest were about $1\frac{1}{2}$ inch long, and the smallest about $\frac{1}{3}$ of an inch. This difference in size seems to us, as indicating that eggs had been deposited and fecundated at different periods in the nest.

They all had the abdomen distended like full grown individuals before spawning. But this was owing to the stomach gorged with food. The skin of the belly was so tender that soon after death it was entirely decomposed, the intestine and stomach then appearing outside of the abdominal cavity.

The structure of the nest was very simple, confervæ in strings were disposed circularly all around. The size of the entire structure was about eight inches in its longest, and six inches in its shortest diameter. There was at least one opening to get in and out, but this portion of the nest we could not examine thoroughly from the want of clear water; and after having been kept for some time out of the water, it was entirely deformed.

The nest laid at the bottom of the pond, one foot and a half deep in that place, and protected by aquatic plants growing along shore. The water here is never subjected to any violent motion, and thus the soft materials of which it was constructed, were resistant enough for that particular locality.

We should think that under other circumstances, as, for instance, a current of water, catfish would construct their nests of a substance more capable of resisting a chance of destruction.

Further observations will tell us more about this interesting subject, and it is with the hope that some one, more favorably situated than we are, will devote some attention to it, that we have brought before the Academy the very little it was our good fortune to observe on this occasion.

The Committee on the following papers by Prof. Baird and Mr. Girard, reported in favor of publication in the Proceedings.

Descriptions of New Species of Fishes collected by Mr. John H. Clark, on the U. S. and Mexican Boundary Survey, under Lt. Col. Jas. D. Graham.

BY SPENCER F. BAIRD and CHARLES GIRARD.

PILEOMA CARBONARIA, B. and G.—Body elongated, subfusiform, compressed; peduncles of the tail slightly detached from the outline of the body. Head forming about the fifth of the entire length. First dorsal lower than the second, composed of fifteen rays; second dorsal containing thirteen rays, the extremity of the posterior ones extending farther back than those of the anal. The latter have eleven rays, the two anterior of which are short spines. The posterior margin of the caudal is very slightly emarginate and composed of seventeen well developed rays and several rudimentary ones above and below. The ventrals are lanceolated and composed of one spiny ray and five soft ones; their tip extends beyond that of the ventrals, and their insertion is a little in advance of the anterior margin of the first dorsal. Their pectorals are broad and composed of thirteen rays.

D XV. 13. A II. 9. C 3. I. 8. 7. I. 2. V I. 5. P 13.

Ground color reddish yellow with transverse bars of black. A black spot at the base of the caudal; latter barred. Base of dorsals, anal and ventrals black. Pectorals unicolor.

Rio Salado, Texas.

2. *BOLEOSOMA LEPIDA*, B. and G.—Body compressed, rather thick in the middle and attenuated towards the extremities. The head is continuous with the body, and forms one-fourth of the entire length. The first dorsal, the ventrals and the anal are quite small compared with the pectorals and second dorsal.

D IX. 11. A II. 6. C 3. I. 6. 5. I. 2. V I. 5. P 14.

Ground color reddish, with indistinct transverse blackish bars; base of the scales black; belly and fins unicolor. A vertical black spot beneath the eye.

Upper tributaries of the Rio Nueces, Texas.

3. *POMOTIS AQUILÆNSIS*, B. and G.—Resembles *P. longulus* in the shape of its body which, however, is proportionally less elongated. The flap of its operculum is much more developed, and directed obliquely downwards. The mouth is smaller; the posterior extremity of the maxillary not extending beyond the vertical line of the anterior rim of the eye. The first dorsal is higher than the second, just the reverse being observable in *P. longulus*. The tips of the ventrals reach the anterior margin of the anal fin. The caudal is slightly emarginate.

D X. 11. A III. 10. C 3. I. 8. 7. I. 2. V I. 6. P 12.

There are twenty-four rows of scales on the deepest portion of the body.

The ground color as preserved in alcohol, is uniform reddish brown. The bases of ventrals, anal and dorsal exhibit a large black patch.

Eagle Pass, Texas.

4. *CATOSTOMUS LATIPINNIS*, B. and G.—General shape subfusiform; head proportionally small, contained five times and a half in the total length. Eyes small, situated near the upper surface of the head; the mouth is small, the lips large and fleshy. All the fins are very much developed and constitute a very prominent feature. The upper margin of the dorsal is slightly concave; the posterior margin of the caudal, crescent shaped; the anal, ventrals and pectorals are posteriorly rounded or subconical.

D I. 14. A II. 8. C 5. I. 8. 8. I. 6. V 10. P 18.

The scales are of medium size, considerably smaller on the back than on the sides and belly. The lateral line runs through the middle of the sides from head to tail.

The upper part of the body is reddish brown; the upper part of tail and sides, greenish brown: the belly, yellowish orange; the caudal is olive; the anal, ventrals, and pectorals, show traces of deep orange, especially on their outer margin.

Rio San Pedro, of the Rio Gila.

5. *GILA EMORYI*, B. and G.—Body elongated, compressed. Head continuous with the body, gradually tapering from the nape to the snout. Head forming the fifth of the entire length. Mouth almost terminal, though inferior; the upper jaw overlapping the lower one of the thickness of the lip. Eyes circular, of medium size. Anterior margin of the dorsal a little nearer to the snout than to the base of the caudal; anterior margin of the anal nearly opposite to the posterior margin of the dorsal. The caudal fin is deeply forked and slender. The insertion of the ventrals is in advance of the dorsal, but does not extend to the anterior margin of the anal. The pectorals are lanceolated, and do not reach with their extremity to the insertion of ventrals.

D III. 9. A II. 10. C 8. I. 9. 9. I. 7. V 9. P 14.

The lateral line makes a slight curve on the sides, being a little nearer to the belly than to the back.

Collected by Dr. John L. Leconte, near the mouth of the Gila.

6. *GILA GRAHAMII*, B. and G.—Body subfusiform, compressed. Head forming a little less than the fourth of the entire length. General disposition of the fins as in the preceding species, they differ in their structure as follow.

D II. 10. A II. 10. C 10. I. 9. 8. I. 10. VI. 10. P 17.

The disposition of the scales presents likewise differences which will be better understood by figures.

Head above and back, reddish brown; upper half of sides greyish brown; inferior half of sides, greyish yellow. Abdomen, dull yellow, the whole with a metallic reflection. Fins unicolor, of the hue of the region to which they belong.

Rio San Pedro, of the Gila.

7. *FUNDULUS GRANDIS*, B. and G.—Body stout and very much compressed, five inches long; the head forming the fourth of that length. Back bluish black, sides greyish, with yellow spots. Beneath dull yellow. Dorsal and caudal deep bluish black, margined with yellow; other fins yellow; the base of anal spotted. Body and fins of the female unicolor.

Formula of fins: D 11. A 12. C 2. I. 9. 9. I. 2. V 7. P 18.

Brackish waters in the vicinity of Indianola, Texas.

8. *FUNDULUS TENELLUS*, B. and G.—Body regularly fusiform, compressed, the head forming two-ninths of the entire length. Eyes large. The back greyish yellow, with small black dots irregularly dispersed. A black vitta extends from the snout, across the eye, down through the sides, to the base of the caudal fin. Beneath light yellow. Dorsal, anal and caudal greyish with minute black dots; ventrals and pectorals yellow, without dots. Anterior margin of anal in advance of the dorsal. Tip of ventrals almost reaching the anal.

D 8. A 10. C 2. I. 8. 7. I. 1. V 6. P 12.

Prairie Mer Rouge, La. (James Fairie, Esq.,) and Russellville, Ky.

9. *HYDRARGYRA SIMILIS*, B. and G.—Back, bluish grey; sides and abdomen, yellowish. Transverse narrow black bands in both sexes. Fins yellow, unicolor in the female, dorsal, caudal and anal bluish grey. In the male the posterior margin of the dorsal being provided with one black spot and two yellow ones, one above, the other below the black. The caudal fin is posteriorly truncated.

D II. A 8. C 3. I. 8. 7. I. 2. V 5. P 18.

Brackish waters in the vicinity of Indianola.

10. *CYPRINODON ELEGANS*, B. and G.—The general form varies according to the sexes; the back in the male is very much arched, the body consequently is deeper than in the female. The largest individuals are two inches and three-eighths in total length. The head forms two-sevenths of the length. Back deep bluish black; sides variegated with bluish black and greenish yellow. The posterior edge of the caudal is margined with black in the male. A black spot, more conspicuous in the female, is observed on the posterior margin of the dorsal.

D 11. A 10. C 3. I. 8. 8. I. 2. V 6. P 14.

Rio Grande del Norte.

11. *CYPRINODON MACULARIUS*, B. and G.—Body elliptically elongated, an inch and six-eighths long; head short and rounded forming one fourth of the entire length. Above reddish brown, yellowish beneath, maculated with black; spots on the sides with an irregular tendency to arrange in vertical bands. Dorsal blackish; other fins dull yellow, with a greyish base.

D 8. A 10. C 3. I. 7. 6. I. 2. V 7. P 12.

From the Rio Gila.

12. *CYPRINODON BOVINUS*, B. and G.—Has a general resemblance in shape to *C. elegans*; the head, however, is more truncated. The color in the male is uniform blackish brown above; yellowish green beneath. The fins are unicolor except the caudal which has a blackish margin. The coloration of the female differs from that of the male in having the lower portion of the flanks irregularly

maculated; the fins are unicolor except the dorsal which has a black spot at its posterior margin.

D 9. A 8. C 6. I. 7. 6. I. 5. V 6. P 14.

Leon's Springs, Rio Grande del Norte.

13. *CYPRINODON GIBBOSUS*, B. and G.—The back forms a very prominent arch in the individuals of both sexes. The nape is often depressed and subconcave. The head is proportionally small, and the eyes large. The back, upper part of sides, head, and dorsal fins, are uniformly bluish black in the male; beneath golden yellow, and the caudal margined with black; the anal, ventrals and pectorals, yellow. The female exhibits vertical bars of black on the sides from the head to the caudal fin which is unicolor like the anal, ventrals and pectorals. The dorsal is provided posteriorly with a black spot.

D 10. A 11. C 4. I. 8. 7. I. 3. V 5. P 15.

Brackish waters of Indianola.

14. *HETERANDRIA AFFINIS*, B. and G.—Body elongated, subfusiform and compressed. Head forming about one-fifth of the entire length. Body yellowish brown above, orange beneath. Fins unicolor, except the caudal which has two narrow bands of black.

D 6. A 8. C 3. I. 7. 6. I. 2. V 5. P 12.

Rio Medina and Rio Salado.

15. *HETERANDRIA NOBILIS*, B. and G.—General form much stouter than in the preceding species; back arched. Head forming the fourth of the entire length. Ground color reddish; margin of scales black.

D 8. A 7. C 4. I. 7. 7. I. 3. V 6. P 10.

From Leona and Camanche springs, valley of the Rio Grande del Norte.

16. *HETERANDRIA PATRUEUS*, B. and G.—Body rather elongated, compressed. Head stouter than in *H. affinis*, though forming the fifth of the entire length. Reddish brown above, yellowish beneath.

D 5. A 8. C 3. I. 7. 6. I. 2. V 6. P 11.

Inhabits the Hydrographic basin of the Rio Nueces; specimens were collected in the Rio Sabinal, Rio Leona and Rio Nueces, and Elm creek.

17. *HETERANDRIA OCCIDENTALIS*, B. and G.—Body slender; back slightly arched; head small and conical, forming the fifth of the entire length. Reddish brown above; reddish yellow beneath. Fins unicolor, of a light yellowish white. The ventral line is marked by a black stripe. A black and heavier line may be observed under the tail, between the posterior margin of the anal fin and the base of the caudal.

D 6. A 7. C 4. I. 7. 6. I. 3. V 6. P 10.

Collected in the Rio Santa Cruz of the Rio Gila.

Description of New Species of Fishes, collected by Captains R. B. Marcy, and Geo. B. McClellan, in Arkansas.

By SPENCER F. BAIRD, and CHARLES GIRARD.

1. *POMOTIS BREVICEPS*, B. and G.—Body subelliptical, rather short; head very short, fore part convex and elevated; peduncle of tail of medium size. The greatest depth is more than half of the length, the caudal fin excluded. The origin of the dorsal fin is in advance of the opercular flap, and is composed of eleven spiny rays and ten soft ones. The origin of the anal is under the first soft ray of the dorsal, and contains nine soft and three spiny rays. The posterior extremities of these two fins extend a little beyond the middle of the peduncle of the tail. The caudal is slightly emarginated posteriorly, and its angles rounded; it is composed of seventeen fully developed rays and a few rudimentary ones. The ventrals inserted behind the base of pectorals, extend by their tips to the anus. The pectorals, composed of thirteen rays, do not reach quite so far.

D XI. 10. A III. 9. C 2. I. 8. 7. I. 2. V I 5. P 13.

The scales are large, higher than long, and disposed in twenty rows on the line of the greatest depth, and about eight rows on the peduncle of the tail. The lateral line is very conspicuous, from head to tail, and very much arched on the body.

The opercular flap is very large, broad and posteriorly rounded, and margined with whitish. Irregular light lines are observed on the cheeks and opercular apparatus. The color of the body appears to have been uniform reddish brown.

Otter Creek, Arkansas.

2. *POMOTIS LONGULUS*, B. and G.—Body rather elongated, subfusiform; the head conical and continuous with the body, save a little depression on the snout. The elongated appearance of this species is owing to the head and peduncle of the tail being longer than usual in this genus. The posterior tip of both dorsal and anal fins do not reach the base of the caudal. The origin of the dorsal is immediately above the membranous flap of the operculum; it is composed of ten spiny, or nine or ten soft rays. The anal is situated very far back, its anterior margin begins opposite to the fourth soft rays of the dorsal; it has eight soft rays and three spiny ones. The caudal is slightly emarginate posteriorly, and its angles rounded. It is composed of seventeen fully developed rays and a few rudimentary ones. The ventrals are placed under the pectorals; their tips when bent backwards do not reach the anus. The pectorals are subelliptical, and extend as far back posteriorly as the ventrals.

D X. 9 or 10. A III. 8. C 2. I. 8. 7. I. 1. V I 5. P 13.

The scales are of medium size, longer than high. Twenty seven rows may be counted across the line of greatest depth of the body, and about thirteen rows on the tail. The lateral line is regularly arched on the body, and almost straight on the tail.

Color uniformly dark brown, probably considerably altered by the alcohol. The membranous opercular flap is comparatively small and entirely black. Irregular lighter lines are observed on the cheeks and opercular apparatus.

Otter Creek, Arkansas.

3. *LEUCISCUS LUTRENSIS*, B. and G.—Body elongated, fusiform, compressed, largest specimen examined, two inches and three-eighths; head forming a little less than the fourth of the entire length. Eyes proportionally large. Anterior margin of the dorsal fin at an equal distance from the snout and base of caudal. Caudal forked. Anal fin entirely behind the dorsal. Insertion of ventrals in advance of the dorsal; their tip not reaching the anterior margin of the anal. Tip of pectorals almost contiguous to the base of the ventrals. Scales large. Lateral line forming a very open curve convex towards the abdomen, and nearer to it than to the back.

D I 8. A I 9. C 2. I. 9. 8. I 1. V 8. P 11.

Ground color bluish brown; back blue; dorsal fin yellowish brown; caudal, pectorals and ventrals, reddish.

Specimens of this species were caught in the Otter Creek, Arkansas.

4. *LEUCISCUS BUBALINUS*, B. and G.—Body very much compressed, back considerably arched, and peduncle of tail quite narrow. Head two-ninths of the total length, which is two inches and one-eighth. The dorsal and anal fins are very much developed, while the pectorals and ventrals are comparatively small. The caudal is forked. The base of ventrals is under or a little behind the anterior margin of the dorsal, and their tips reach the anterior margin of the anal. The tips of pectorals are contiguous to the base of ventrals.

D 8. A I 9. C 4. I. 9. 9. I. 3. V 8. P 11.

The scales are large and the lateral line forms a very open curve convex towards the abdomen and nearer to it than to the back. Differ from the preceding by the structure and position of the fins and scales.

Caught with the preceding in Otter Creek, Arkansas.

5. *CERATICTHYS VIGILAX*, B. and G.—Body fusiform, compressed; specimens before us two inches long, probably immature. The head forms the fifth of the

length. The eyes are rather small. The dorsal fin is longer than high; its anterior margin situated almost at the same distance from the snout and the base of the caudal fin. Caudal fin forked. Anal back of the dorsal. Base of ventrals behind the anterior margin of the dorsal; tip not reaching the anal fin. Pectorals not reaching the base of ventrals. The pectorals, ventrals and anal are proportionally small compared to the dorsal.

D 9. A 8. C 3. I 8. S. I 3. V 8. P 14.

Scales large; lateral line running through the middle of the sides, slightly bent downwards on the abdomen.

Back brownish yellow; a greenish grey stripe down each side covering the lateral line.

Caught in Otter creek, Arkansas.

On leave granted, Dr. Leidy made the following communication :

Dr. John Evans, who is now engaged under the United States government to survey part of Oregon, recently sent to the Academy for examination, ten boxes, containing a large quantity of mammalian and chelonian fossils, from the Mauvaises Terres of Nebraska. In this large collection, it is worthy of remark, there is not to be found a single fragment of a bird or a fish bone. Most of the animals indicated by the remains, have already been described in Dr. D. D. Owen's Geological Report, and in the "Ancient Fauna of Nebraska" of the author. The collection contains several new genera and species of mammalia, besides fragments of important parts not before obtained of those species described.

A very large proportion of the collection consists of remains of *Oreodon*, of which there are fragments of about two hundred individuals. The species *O. Culbertsonii* predominates, and then follows *O. gracilis*; while of *O. major* there are very few fragments. This enormous quantity of remains of *Oreodon*, would indicate that the animal was gregarious, and existed in immense herds like the recent Peccary or Bison.

Only a few small fragments of *Poebrotherium Wilsonii* and *Agriochoerus antiquus* are contained in the collection.

Of the two species of *Rhinoceros*, *R. occidentalis* and *R. Nebrascensis*, there are remains of numerous individuals.

Of *Entelodon Mortoni* the collection contains portions of several crania.

Of *Anchitherium Bairdii* there are four crania and numerous small fragments of others.

Of the huge *Titanotherium Proutii* there are numerous small fragments of bones and teeth; and also several entire superior molars, which have served to remove some of the obscurity in regard to the characters of the animal. From the last mentioned specimens it appears that those, which have been described as probably indicating a new species of *Palæotherium*, under the name *P. giganteum*, (Ancient Fauna of Nebraska, pl. XVII, figs. 11-13,) belong to *Titanotherium Proutii*, while several superior molars (lb. figs. 1-7), attributed to the latter, belong to a new genus associating characters of *Rhinoceros* and *Palæotherium*. For this genus and species, represented by figures 1-7, plate XVII, in the Ancient Fauna of Nebraska, I propose the name of *EOTHERIUM AMERICANUM*.

Of *Machairodus primaevus* there are preserved several crania and some other bones.

Of the new mammalia above referred to, there are four carnivora and one ruminant. The carnivora consist of three species of *Hyænodon* and a new genus. The ruminant is a new genus closely allied to the recent *Moschus*. These interesting animals I propose to name as follows :

1. *HYÆNODON HORRIDUS*, Leidy.—This is the largest of the three species above referred to. It is founded upon a much fractured skull and lower jaw; but on both sides of the specimen the teeth are preserved nearly perfect. The formula of the dentition is as follows :

$$\begin{array}{ccccc} & 3 & & 1 & & 7 \\ \text{in.} & \frac{\quad}{3} & \text{c.} & \frac{\quad}{1} & \text{mol.} & \frac{\quad}{7} \end{array}$$

This is the largest species of *Hyænodon* which has yet been discovered, the skull measuring one foot in length, whilst the length of the anterior cusp of the last upper molar or carnassial tooth is one inch in length: and the inferior carnassial tooth measures fifteen lines antero-posteriorly. The series of lower molars closely resemble those represented in the upper left figure of plate XVII of Blainville's "*Subursi antiqui*" (*Ost. Gen.*) and the superior carnassial tooth is like that represented in figures 3—3b. pl. XI. of Gervais' *Zoologie Française*.

Measurements.

Length from occipital condyle to incisive teeth	12 in.
Breadth of face at superior carnassial teeth	4 "
" " canines	2 " 3 lines.
" forehead at supra orbital processes	4 " 3 "
Depth of lower jaw at inferior carnassial tooth	1 " 8 "
Length of crown of upper canine anteriorly	2 " 1 "
" " lower " "	2 " 3 "
" series of upper molars	5 " 2 "
" " lower " "	5 " 9 "

2. *HYÆNODON CRUENTUS*, *Leidy*.—The second species is about the size of the *Hyænodon leptorhynchus*, Laizer and Parieu. It is founded upon a portion of the left side of a lower jaw, containing the root of the canine, and the third and fourth molars and the carnassial tooth.

Measurements.

Length of the lower molar series	4 in. 6 l.
Antero-posterior diameter of inferior carnassial tooth	10½ l.

3. *HYÆNODON CRUCIANS*, *Leidy*.—The head of this species was almost the size of that of the Prairie Wolf. The specimen upon which the species is founded consists of the greater portion of a skull, containing on one side the posterior five molars, and on the other the anterior three molars, and of a lower jaw containing all the molars on both sides except one.

Measurements.

Length of head from post glenoid tubercle to anterior part of the upper canine	5 in.
Length of series of upper molars	3 " 2 lines.
Length of anterior cusp of superior carnassial tooth	5½ "
Antero-posterior diameter of inferior carnassial tooth	6½ "
Depth of lower jaw below the " " "	1 "
Length of crown of an upper canine anteriorly	11 "

1. *DAPHOENUS VETUS*, *Leidy*.—This new genus and species is proposed upon a specimen of a cranium without the face, a fragment of a left upper maxilla containing the posterior three molars, the posterior portion of the left side of the lower jaw containing the last two molars, and a lower ante-penultimate molar of the right side.

The cranium is elongated and narrow and possesses very much the form of that of the recent *Paradoxurus*. The glenoid articulation is transversely concave as in the weasels, etc. The auditory bullæ are comparatively small. Of the superior posterior three molars, the last is the smallest, and has a simple oval crown; the penultimate is second in size and resembles that of the wolf, but is broader in relation to its antero-posterior diameter; and the ante-penultimate is the largest, and also resembles that of the wolf, but is more trilobate, relatively broader compared with its antero-posterior diameter, and has less elevated tubercles.

Of the inferior posterior three molars, the last is smallest and very like that of the wolf; the penultimate is next in size, and has an oval crown as in the wolf, but has much less elevated tubercles; and the ante-penultimate, which is the largest, in relation to the size of the animal, is much smaller than in the wolf, but it has the same general form; presenting a broad heel behind, worn off flat in the specimen, and three lobes anteriorly, having the same relation to one an-

other, as in the wolf, but more nearly equal in size and forming together more of a triangle.

Measurements.

Length of cranium from occipital condyle to the narrowest portion of the former, which is just in advance of the bifurcation of the sagittal crest	3 in.	5 lines.
Breadth of cranium at most prominent part	1 "	11 "
" " where narrowest		10 "
Depth of lower jaw below last molar	1 "	
Antero-posterior diameter of last lower molar		2½ "
" " penultimate lower molar		4 "
" " ante-penultimate "		7 "
Transverse diameter of last upper molar		2½ "
" " penultimate "		5½ "
" " ante-penultimate molar		7½ "

1. *LEPTOMERYX EVANSI*, Leidy.—This is established upon a cranium which has lost the nose, and is broken at the parietal region. The specimen contains upon one side all the molars, six in number, and upon the other side the posterior four molars; and it is accompanied by a portion of the lower jaw containing the true molars and the last premolar.

The genus is closely allied to the existing *Moschus*, and the species was about the size of the *M. Javanicus*. The six superior molars form a closed row, in advance of which a hiatus exists. The true molars are composed of four lobes resembling those of recent musks, but they possess a peculiar generic distinction, which is a tubercle rising out of the base antero-internally of the postero-internal lobe, about one-third the size of the lobes themselves, and appearing as if it was a rudimentary fifth lobe. The third premolar consists of two lobes as in the musks, and the anterior two premolars in section are tri-lateral and consist of a broad external and a narrow internal lobe.

The lower true molars are like those of the musks, but in the last of the series the ordinary fifth lobe of ruminants is notched so that there are actually six lobes to the tooth. The last premolar is worn in the specimen into a surface, resembling in some degree the figure 3 in shape. In comparison with *Moschus Javanicus* the forehead of *Leptomeryx Evansi* has about the same inclination forward and is almost as broad; but the sagittal crest is longer and the temporal fossæ are more horizontal and more capacious; the orbits are smaller and more directed upward; the zygoma is deeper; the post orbital arch is more vertical, and, if the specimen is a correct representative of the species, it is open for about a line; the glenoid articulation is more deeply concave, and it possesses a strong post glenoid tubercle; the auditory bullæ are much smaller; and finally the inion is broader.

Measurements.

Length from occipital condyles to first molar	2 in.	10 lines.
Breadth at zygomata	2 "	
Length of upper molar series	1 "	4 "
" " series of lower true molars		11 "
Transverse diameter of orbit		10 "
Vertical " "		9 "

The species I have named in honor of its discoverer, Dr. John Evans.

Of turtles the collection contains numerous carapaces, which present such a gradation of form, size and growth to the five species described in the "Ancient Fauna of Nebraska," that I feel doubtful whether there is more than one species among them, for all appear to me to be only different ages of *Testudo lata*, the only one which was represented as full grown, as indicated by the sutural connexion of the costal with the marginal plates.

(The specimens upon which were established the new species and genera in this communication were exhibited by Dr. Leidy to the members.)

ELECTIONS.

Dr. G. Emerson, of Philadelphia, was elected a *Member*, and the Rev. Thomas G. Porter, of Lancaster, Pa., was elected a *Correspondent*.